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LSI CORPORATION 1621 BARBER LANE MS: D-106 MILPITAS, CA 95035			EXAMINER MOHR, ERIC JOHN	
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			2624	
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/774,913

**Applicant(s)**

WINGER, LOWELL L.

**Examiner**

ERIC J. MOHR

**Art Unit**

2624

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 December 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 2, 4-10, 12, 13 and 15-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4-10, 12, 13 and 15-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/808)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

***Response to Amendment***

***Response to Arguments***

1. Applicant's arguments filed 21 December 2007 have been fully considered but they are not persuasive.

Considering the applicants arguments with respect to the amended claims, i.e., a method and system for determining a context for coding a video into a binary arithmetic coded format, in which the context of each block is determined by evaluating several conditions of neighboring blocks including direct mode, skip mode, sub-partitioning, and the status of specific flags, reads upon Marpe in view of Wiegand, as follows:

Marpe discloses a method for encoding a syntax element contained in a prerecorded video signal into a coded bit stream, including a context modeler which determines the context of a current block by evaluating the modes of neighboring blocks. Therefore, Marpe shows the limitations of determining a block context using a plurality of variables and coding blocks using the determined context, thus creating a binary arithmetic coded output. Wiegand discloses an image compression standard including intricate details for block context determination using the conditions of neighboring blocks. Therefore, Wiegand shows the limitations of evaluating the neighboring blocks for the presences of sub-partitioned blocks, skip mode blocks, direct mode blocks, and the status of flags specific to the blocks. Both references use terminology and notation that is very similar (and in some cases identical) to those in the application. Therefore the amended features are clearly shown by the references cited. Concerning combination, Marpe and Wiegand are analogous references both

drawn to video compression systems employing context modeling and therefore are combinable. Concerning motivation, Wiegand discloses benefits as stated below.

Considering claims 4, 5, 15, and 23 as amended, Wiegand now reads upon the scope of these claims as presented below.

Considering claims 6 and 16, the examiner has clarified the position on page 186 that reads on the claims, now pointing to one of two locations where Wiegand compares the prediction mode of the current block to that of surrounding blocks from a list of syntax elements, presented in the reference in an equation very similar to that presented in the application.

The claims stand as follows:

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marpe et al (US 2005/0074176) further in view of Wiegand et al (Joint Video Team (JVT) of ISO/IEC MPEG & ITU-T VCEG), May 2003.

Consider claims 1, 12, and 20, Marpe discloses a method and system for determining a context for coding (**see abstract**), comprising the steps of: (A) a evaluating a neighbor condition corresponding to a plurality of neighbor blocks to a

current block in a bitstream of digital video (**see paragraph 0087 where Marpe discusses examining the prediction modes of neighboring blocks**), wherein said neighbor condition comprises (B) generating a plurality of first variables based on said neighbor condition results (**see paragraph 0087 where Marpe discusses setting the variables condTermFlagA and condTermFlagB based on the modes of neighboring blocks**); and (D) coding said bitstream using a binary arithmetic coding based on a particular context among a plurality of context (**see paragraph 0088 where Marpe discusses performing arithmetic encoding using a context designated by the value of the variables**).

Marpe does not explicitly disclose the neighbor condition comprising: (i) a first at least one of said neighbor blocks is subpartitioned to an 8x8 size, (ii) a second at least one of said neighbor blocks has a direct mode of a plurality of prediction modes, (iii) a third at least one of said neighbor blocks has a skip mode of said prediction modes and (iv) a reference index zero flag has a non-zero condition; calculating a context index increment variable based on said first variables; or choosing the coding context among a plurality of context determined from said context index increment variable.

Wiegand discloses examining neighboring macroblocks (**p. 20, section 6.4.7.1 describing mbAddrA and mbAddrB as neighboring macroblocks**) for a conditions including: being in a skip mode (**p. 185, s. 9.3.3.1.1.6: mbAddrN is skipped**), direct mode (**p. 185, s. 9.3.3.1.1.6: mb\_type is equal to B\_Direct\_16x16 or B\_direct\_8x8**), subpartitioned to an 8x8 size (**p. 185, s. 9.3.3.1.1.6: mb\_type is equal to B\_direct\_8x8**), and having a reference index zero flag in a non-zero condition (**p. 186,**

**s. 9.3.3.1.1.6: refIdxZeroFlagN is equal to 1).** Wiegand discloses calculating a context index increment variable based on said first variables (p. 186, s. 9.3.3.1.1.6: **ctxIdxInc is an expression of condTermFlagA and condTermFlagB**). Wiegand discloses choosing the coding context among a plurality of context determined from said context index increment variable (p. 181, s. 9.3.3.1: **ctxIdxInc is used to calculate the context index variable used to choose the coding context**).

Marpe and Wiegand are analogous references both disclosing the details of context adaptive binary arithmetic coding, often using the same variable names in describing the process. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the invention of Marpe, and modify the context encoding process to include testing neighboring pixel modes and using the results to choose a context for coding, as taught by Wiegand, thus enabling high compression capability for a desired image quality, as discussed by Wiegand (p. xiii, s. 0.5).

Consider claims 2 and 13, Wiegand discloses said context index increment variable is based on a sum of two of said first variables (p. 186, s. 9.3.3.1.1.6: **ctxIdxInc is the sum of condTermFlagA and condTermFlagB**).

Consider claims 4 and 15, Wiegand discloses step (B) comprising the sub-step of: independently setting each of said first variables to said non-zero condition response to said neighbor condition indicating that a corresponding one of said prediction modes is associated with a same list applicable to a syntax element being coded (p. 186, s. 9.3.3.1.1.6: **condTermFlagN is set to 1 after a comparison of neighboring block**

**conditions such that the current block prediction mode, Pred\_LX, is not equal to that of the surrounding block found using the MbPartPredMode function).**

Consider claims 5 and 23, Wiegand discloses step (B) comprising the sub-step of: independently setting each of said first variables to a zero condition in response to said neighbor condition indicating that a corresponding one of said prediction modes is (i) said direct mode in a first case and (ii) said skip mode in a second case (**p. 185, s. 9.3.3.1.1.6: condTermFlagN is set to 0 for block conditions including the macroblock being skipped and mode being direct mode as indicated by B\_Direct\_16x16 or B\_Direct\_8x8).**

Consider claims 6 and 16, Wiegand discloses that step (B) comprises the sub-step of: independently setting each of said first variables to a zero condition in response to said neighbor condition results indicating that a corresponding one of said prediction modes does not use a pixel prediction from a same list applicable to a syntax element being coded (**top of p. 186: condTermFlagN is set to zero when the current block prediction mode is not equal to a surrounding block prediction mode, Pred\_LX is not equal to value from MbPartPredMode function).**

Consider claim 7, Wiegand discloses that each of said first variables comprise a conditioning term flag that describes a functional relationship between a spatially neighboring symbol and a value of said first variables (**p. 183-188: ctxIdxInc is derived in several functional ways including using condTermFlagA and condTermFlagB).**

Consider claim 8, Wiegand that each of said first variables comprises an absolute value motion vector difference component (**p. 186, s. 9.3.3.1.1.7: discusses**

**computing the absolute value motion vector difference and using said difference to derive a mode for context coding).**

Consider claim 9, Marpe discloses that coding comprises context adaptive binary arithmetic decoding **(see paragraphs 0102-0106 where Marpe discusses the pieces and operation of a context adaptive binary arithmetic decoder).**

Consider claim 10, Marpe discloses that said coding comprises context adaptive binary arithmetic encoding **(see paragraphs 0140-0143 where Marpe discusses the components of a context-based adaptive binary arithmetic coder).**

Consider claim 17, Marpe discloses that said neighbor blocks comprise a first neighbor block left of said current block and a second neighbor block above said current block **(see paragraph 0079 where Marpe discloses using the macroblock pairs to the left and top of the current macroblock).**

Consider claim 18, Marpe discloses that said first circuit comprises a context modeling circuit **(see paragraphs 0140-0143 where Marpe discusses the components of a context-based adaptive binary arithmetic coder including that of context modeling).**

Consider claim 19, Marpe discloses that said second circuit comprises one of a context adaptive binary arithmetic decoder **(see paragraphs 0102-0106 where Marpe discusses the pieces and operation of a context adaptive binary arithmetic decoder)** and a context adaptive binary arithmetic encoder **(see paragraphs 0140-0143 where Marpe discusses the components of a context-based adaptive binary arithmetic coder).**



Consider claim 21, Wiegand discloses that said conditioning term flag is used to code a reference picture index list type of syntax element (p. 174-175, s. 9.3.2: coding based on the syntax elements ref\_idx\_L0 and ref\_idx\_L1, and p. 185, s. 9.3.3.1.1.6: using ref\_idx\_L0 and ref\_idx\_L1 in the process for determining condTermFlagN).

Consider claim 22, Wiegand discloses that said absolute value motion vector difference component is used to code a motion vector difference list type of syntax element (p. 174-175, s. 9.3.2: coding based on the syntax elements mvd\_L0 and mvd\_L1, and p. 185, s. 9.3.3.1.1.6: using mvd\_L0 and mvd\_L1 in the process for determining absMvdCompN).

### ***Conclusion***

3. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

### **Contact Information**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ERIC J. MOHR whose telephone number is (571)270-5140. The examiner can normally be reached on 7:30am-5pm M-Th, 7:30am-4pm Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on (571) 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Eric J Mohr/

Application/Control Number: 10/774,913

Page 10

Art Unit: 2624

Examiner, Art Unit 2624

/J. W./

Supervisory Patent Examiner, Art Unit 2624